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ABSTRACT

This paper brings together and examines several of the better known developments in the field of simulation as an instructional alternative in teacher education. Six examples of simulation in preservice and inservice teacher education are described. Each description includes information on the purpose and form of the simulation, how to use it, its specific advantages and drawbacks, and whom to contact for further information. The six examples are 1) classroom simulator, 2) teaching problems laboratory, 3) Project Insite, 4) low-cost instructional simulation, 5) human relations: one dimension of teaching, and 6) inner-city simulation laboratory. The booklet discusses the general advantages of simulation and the specific advantages of using it in conjunction with student teaching, as part of the college-based teacher education program, and in inservice and graduate education. The report also outlines briefly several questions which should be considered in deciding whether or not to use a particular simulation. (RT)

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Simulation as an Instructional Alternative in Teacher Preparation

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DONALD R. CRUICKSHANK
President, Wheelock College
Boston, Massachusetts

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ASSOCIATION OF TEACHER EDUCATORS
1201 – 16th Street, N.W.
Washington, D.C. 20036

Richard E. Collier, Executive Secretary

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PREFACE

Until recently, teacher education programs relied upon the traditional sequence of observation, participation, and student teaching to provide the necessary practice in learning to teach. The focus was often blurred, the analyses opinionated, and the feedback distorted or vague. They were all we had, however, and supervisors in schools and colleges labored mightily with inadequate tools.

The development of conceptual tools for the analysis of teaching has now opened up the possibility of selective analysis of specific aspects of a teaching situation. Video and audio recorders have made it possible to play back samples of classroom interaction as a basis for analytical conferences. Role-playing techniques have been refined and extended to become complex, simulated situations supported by carefully coordinated media systems.

The resources are now available for the development of a competency-based and systematically designed teacher education program. They also make possible a great variety of improvements in any type of program. As contributions to the literature reporting on these resources, the Association of Teacher Educators and the ERIC Clearinghouse on Teacher Education (see page 27) decided to publish jointly three monographs (issued as ATE Research Bulletins) comprising a series of "Supervisory Strategies in Clinical Experiences."

Simulation as an Instructional Alternative in Teacher Education (Research Bulletin 8) is the first in the series. Its author, Donald R. Cruickshank, is a major authority in the simulation field and has produced both the *Teaching Problems Laboratory* and the *Inner-City Simulation Laboratory*, multimedia packages available from Science Research Associates

Scheduled next in the series is *Microteaching: Selected Papers* (Research Bulletin 9), by James M. Cooper and Dwight W. Allen, both of the University of Massachusetts; and Robert F. Schuck of the University of Pittsburgh. This will be followed by *Interaction Analysis: Selected Papers* (Research Bulletin 10), which includes contributions by Norma Furst, Temple University; J. T. Sandefur and Alex A. Bressler, Kansas State Teachers College; and Donald P. Johnston, United States International University.

The ideas presented in this bulletin and its companions in the series are not necessarily those of the Association of Teacher

Educators or the ERIC Clearinghouse on Teacher Education and its sponsors.*

The ATE and the Clearinghouse are grateful to all those whose efforts have made this series possible. They hope the ideas expressed may be of special value to those who have some responsibility in developing programs of clinical experiences which exemplify the ATE *Guide to Professional Excellence*. If so, their purpose will be well served.

Dorothy M. McGeoch
Donald W. Protheroe
ATE Communications Committee

Joel L. Burdin, Director
ERIC Clearinghouse on Teacher Education

June 1971

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INTRODUCTION

This paper is about simulations. The general purpose is to acquaint the reader with simulation as an instructional alternative in teacher education, specifically with a few of the better known developments in the field. Many ways that simulations can be used and the general advantages of simulation will be cited. Nothing said in the paper is new. It is an attempt, rather, to put together selected data that can be useful to teacher educators who are faced with the increasing demands to develop more relevant professional curriculum.

D.R.C.

CHAPTER ONE

Selected Examples of Simulations In Teacher Education

THE "UNSINKABLE CHARLIE BROWN": A CHILD TO TEACH

How would you like to be able to provide your preservice students or student teachers with an unharmable child to teach? Unbelievable? Unattainable? Not at all if in the not too distant future educators and engineers bring together their talents to create a lifelike Charlie Brown, Nancy, Orphan Annie, or Dennis the Menace. In addition to behaving in their normal ways, our protagonists could at will take on additional characteristics or dysfunctions. They could exhibit visual, auditory, and speech problems; display aggression or withdrawal; or in a skill area such as reading, demonstrate reversals, substitutions, confabulation, repetition, or regression. Clearly a player's capacities (or incapacities if you will) would be limited only by the imagination of his creators or by the capacity of the computer to which he would be wed.

Why not an unharmable, unwoundable, unsinkable Charlie Brown? Medical science already has a deathproof patient, Sim One. He was developed by University of Southern California medical researchers and engineers of Aerojet-General Corporation. A computer-controlled, anthropometric manikin, Sim One is utilized to facilitate the training of anesthesiologists in surgical techniques, including administration of oxygen and endotracheal intubation. Responsive to the doctor's treatment, he twitches when the muscle relaxant succinylcholine is injected while administration of other drugs into his system causes his eyes to open and close or his pupils to dilate or contract. Among the many advantages of Sim One is the ability of the trainer to set up emergency situations, including heart arrest, bucking, and vomiting. Since Sim One is always available for practice, it is not surprising that time required to train the anesthesiologist in the process of intubation has been reduced from three to six months to one to two weeks. Practice on Sim One also reduces the odds that one of us will be our doctor's first patient.

Although no one in professional education has yet devised or developed simulations as sophisticated as Sim One, efforts have led to the construction of simulations intended, in the same way, to provide the teacher education student with opportunities to practice

teaching and to gain some knowledge or feedback regarding its effect. Brief discussions of representative work follow.

EXAMPLES OF SIMULATIONS IN PRESERVICE AND IN-SERVICE TEACHER EDUCATION

Classroom Simulator

Kersh (10) and others designed the first notable simulation in the field at the Teaching Research Laboratory of the Oregon State System of Higher Education. Participants in the simulation are oriented to a hypothetical elementary school in a college community and to a classroom in which they student teach. Each participant, in addition, receives cumulative record cards for his twenty-two pupils. Hereafter participants assume the role of the student teacher in Mr. Land's sixth grade. By use of multiple projection techniques the student teacher, standing in front of a large projection screen, is exposed to up to sixty filmed classroom problems, one at a time. As each problem is presented, the student teacher is requested to act out a response. Depending upon the response, an experimenter seated nearby selects and projects one of two or three possible feedback sequences. The intention of the simulation is to shape the student teacher's behavior, that is, to get him to react to classroom situations in ways judged by a jury to be optimal. Each problem sequence can be repeated up to ten times until the student teacher demonstrates an acceptable response.

The following example from Tansey and Unwin (14:117) illustrates the Kersh technique. The student teacher is told by the experimenter (his tutor) that:

> This is the first part of the day, just a few minutes before the tardy bell rings. Mr. Land had been called to the office to straighten out a matter concerning lunch tickets and has asked you to monitor the class. You are standing in front of the room. About half the youngsters are in the room. The rest are coming in from the playground.

Next, the student teacher is asked to stand before the life-size rear projection screen. The film begins:

> Scene opens on the class which is about half empty. Jack approaches you and says that he has been sick the previous week and should not be required to play during recess.

The film ends and the student teacher is to respond. Responses could include the following which vary in degree and kind:

1. "Thank you Jack. We will check this with Mr. Land."
2. "Would you mind checking this with Mr. Land?"
3. "Thank you Jack, I am sure Mr. Land will take care of it."

Such responses are considered to be supportive, but the student teacher defers to the authority of his supervisor.

4. "Go see Mr. Land, will you?"
5. "I can't help you, Jack. That's Mr. Land's department."

Responses 4 and 5 are considered nonsupportive but show deference to the supervisor's authority.

6. "I understand, Jack. If you have a note, I can help you."
7. "I'm sorry to hear about that, Jack. We will arrange something else for you to do."

These responses are classified as supportive, but beyond that the student teacher acts on his own, formulating his own rules.

8. "Well, Jack, where's your note?"
9. "Go to your seat, Jack. The bell is about to ring."
10. "Don't bother me with this now."

The final three responses are nonsupportive and indicate that the student teacher has established his own rules for handling the situation. Generally, responses to this classroom incident can be placed in a two-by-two matrix whose cells are: supportive—defers to authority, supportive—establishes own rules, nonsupportive—defers to authority, nonsupportive—establishes own rules. (See below.)

Recall that the purpose of the simulation was to shape the student teacher's behavior, that is, to get him to react in optimal ways as judged by a jury. How then is the student teacher expected to behave in such a problem situation? There are two standards to be met. First, when he is not informed of existing rules, the student teacher is to defer to authority rather than to establish his own rules. Second, in any case, the student teacher is to be supportive. When confronted with this and similar classroom problems, the student teacher's behavior should generally fall in Cell A of the matrix.

	Supportive	Nonsupportive
Defers to authority	A	C
Establishes own rules	B	D

According to the student teacher's reaction, one of two feedback film sequences is projected. In the first, or X, sequence, Jack nods his head and returns to his seat. In the second, or Y, sequence, Jack reaches in his pocket and takes out a note. The X sequence is shown

if the student teacher responds with either number 1, 2, 3, 4, 5, 7, 9, or 10 above. The Y sequence is used following responses 6 or 8.

Reactions to the Classroom Simulator have been noted by Tansey and Unwin (14) and Cruickshank (5). The former note that the Kersh work was a significant contribution to initial research and development and, utilizing an operant conditioning model, did provide participants with knowledge of possible (probable, according to Kersh's jury) pupil and classroom reaction to their teacher behavior. However, Tansey and Unwin (14:14) are pessimistic about possible widespread use of the Classroom Simulator:

> . . . it is not likely to be widely used in its present form as an instructional and training device because of its requirements of special skills and because of the expense involved in setting up such a workshop.

Cruickshank (5) notes Kersh's reactions and his own. They include the following:

1. There are numerous, almost infinite, ways a teacher might respond to a classroom event. At the same time there are countless ways a class and individual pupils may respond to the teacher. The Classroom Simulator limits both of those response continua. The student teacher may do only a limited number of things, while feedback is even more seriously limited to two or three pupil responses.
2. The kind of feedback to be provided student teachers was determined by a small jury of three master teachers.
3. Student teachers were expected to modify their behavior to a predetermined acceptable pattern. In the illustration used, the student teacher was to be supportive and to show deference. Imposition of preconceived notions about how student teachers, or indeed teachers, should think and act has resulted in an amazing sameness and sometimes mediocrity among teachers and schools. In addition, we know so little about criteria of teaching effectiveness that it is dangerous to engage in operant conditioning toward that end.
4. Instruction in the Classroom Simulator is both costly and time-consuming since it is essentially a tutorial activity.

Twelker (17:3) notes other training limitations of the Kersh work.

The Classroom Simulator as a first generation effort was remarkably successful and paved the way for others to follow. A few Classroom Simulators have been built at Michigan State University and at the University of Oregon. Further information about this work can be obtained directly from Dr. Bert Y. Kersh, Dean, Oregon College of Education, Monmouth 97361.

Teaching Problems Laboratory

Encouraged by the work of Kersh and the University Council for Educational Administration (19), Cruickshank and Broadbent (6) began their work at State University of New York College at Brockport. Participants in that simulation first are oriented to the town and school system in which they have been appointed new fifth-grade teachers. Each participant assumes the role of Pat Taylor and receives materials normally provided new staff members—a faculty handbook, an audiovisual manual, sociograms, samples of children's work, and assorted school district forms. Acting in the role of Pat Taylor, participants are exposed to thirty-one critical teaching problems that had been gleaned from a survey of 163 first-year teachers. The problems are presented through kinescope recordings, in role plays, or as written incidents. For every problem, each Pat Taylor is asked independently (a) to define or identify the problem, (b) to identify forces and factors which seem to be contributing to the problem, (c) to locate pertinent related information, (d) to project alternative courses of action, (e) to select a more desirable course of action, and (f) to prepare to communicate or implement a decision. After 30-45 minutes of independent problem solving utilizing the professional materials provided, including selected reading, Pat Taylors are asked to interact in small groups, projecting their solutions for group inspection. Participants are encouraged to role play and to exchange roles. Finally, each problem and the issues involved are explored by the total group. Unlike activities with the Classroom Simulator, there is no attempt made to shape behavior, the goals being (a) to increase skill in classroom problem identification; (b) to increase skill in locating and utilizing related data; (c) to stretch the response behavior of each participant, i.e., to encourage consideration and employment of a greater variety of response strategies; (d) to provide group feedback or possible consequences to proposed problem solutions; and (e) to provide opportunities for participants to learn about and practice a variety of professional activities, including test construction, parent conferencing, teaching difficult lessons, and developing a reading program.

Following construction and field testing of this simulation, a revision of the materials was made by Cruickshank, Broadbent, and Bubb (8). The previously videotaped incidents were filmed in 16 mm, sound and color. Additional changes were made, reducing and consolidating the printed materials. The final version of these materials is known as the *Teaching Problems Laboratory* and was published by Science Research Associates in 1967.

Presentation of a critical teaching problem from the Laboratory follows. (Pat Taylor is not shown in the filmed incidents. Rather, the camera serves as his or her eyes. Pat's voice too is not heard. What he or she says appears as printed words in the fashion of foreign film subtitles. The purpose of these unusual precautions is to eliminate a participant's identification of the teacher's sex.)

> Scene opens with Pat Taylor working in a small reading group in front of the room. As Pat scans the class, Jack Brogan is noticed as he stretches, yawns aloud, and gets up from his chair. He walks to the pencil sharpener, noisily grinds his pencil, breaking the point several times. Children in the reading group are distracted from their silent reading. Jack moves toward his seat but as he passes Jeffrey Knew he reaches down and closes Jeffrey's book. A minor disturbance occurs and Pat Taylor requests Jack to sit down and finish his work. Jack does. The reading group and class return to work. Soon Jack is seen to disturb Sue Carpenter, the girl sitting next to him, eventually taking her paper from her desk. She shouts, "Jack, give me back my paper!" Pat Taylor declares, "Jack, that's enough from you!" He appears to go back to work but soon crumples up his paper and throws it on the floor as the scene ends. (From a production script.)

The participant next directs his attention to the following questions:

1. Identify the problem.
2. Why do you believe the problem arose?
3. What do you believe your immediate goal should be?
4. What are some alternative courses of action available to you for reaching your immediate goal?
5. Which of the available courses of action would you take? Why?
6. Describe in writing exactly what you would say or do at the end of the film.
7. What are some alternative ways to prevent the problem from arising again?
8. What information, if any, did you find which was useful in better understanding Jack Brogan?
9. What other information would you like to have? How could it be obtained?

After a variable length of independent problem solving, small groups are formed and charged to examine the incident and especially alternative solutions, projecting possible consequences of each. Participants are encouraged to act out or role play potential solutions. Finally, forming a large group, participants explore the problem further, sharing ideas and experience and addressing issues.

Unlike the Classroom Simulator, no attempt is made to classify responses or evaluate them in the strict sense of the word.

Tansey and Unwin (14:15) feel that the methodology employed

in the Teaching Problems Laboratory makes it "flexible, easily modified, less costly, and probably as efficient" as the Kersh work. In addition they note, "In this kind of situation [Cruickshank's], problems need not be acted out alone, and so as a training technique it is better since it allows more people to be trained in any given time with less supervision."

The preservice and in-service preparation of teachers is being affected by use of the Teaching Problems Laboratory. More than three-hundred institutional units have been purchased by colleges and public schools. For further information, write to Dr. Donald R. Cruickshank; Frank W. Broadbent, School of Education, Syracuse University, Syracuse, New York 13210; Roy L. Bubb, State University of New York College at Brockport, 14420; or Science Research Associates, 259 East Erie Street, Chicago, Illinois 60611.

Project Insite

Elementary and secondary school simulations were created as part of general curriculum revision at Indiana University. The work is described by Marten and others (12). In the elementary school simulation, utilizing a week-long series of lectures and exploratory sessions, participants are introduced to theoretical notions about teaching and then to the simulated community, its schools, the classrooms, pupils, school policies, parents, and pupil work. For each session specific purposes, media, and procedures are explicit. For example, Session IV focuses on the pupils. The purposes of the session are (a) to enlarge students' views of available sources of information about pupils, and (b) to provide opportunities for students to begin to use pupil information in decision making. Media called for in the session include information about J (a child), examples of school work, note from parents, taped description by teacher, cumulative folders, and composite data sheets about pupils in the simulated classroom. Procedures are listed as follows:

1. Alternative modes of action (previously presented) were discussed by participants.
2. Tapes were used to reveal background information about the two pupils in the critical incidents. Decisions were considered in light of this information.
3. Cumulative folders for each of the pupils were distributed to students in small groups. Particular attention was paid to pupils who figured in critical incidents and in classroom films.
4. Class lists of data from standardized tests, showing range of age and abilities, were studied and summarized in large group discussion.

5. Small groups were asked to make decisions about J's promotion based on information provided.

An example of a taped problem, as given by Marten (12:17), follows:

Mrs. C (teacher):	W is really working up to his potential and making fine progress.
Mrs. J (parent):	How do you determine this potential?
Mrs. C (teacher):	Oh, we have several achievement test scores and I.Q. scores. They're quite accurate and give us a pretty good picture of what to expect of each child.
Mrs. J (parent):	What is W's I.Q. score?

Tansey and Unwin (14:124) are somewhat harsh in their comments about Project Insite, noting:

> . . . Even though the name simulation is given to this project, the examples they quote savor more of the case-study and miss the point of involvement which seems so much a part of simulation . . . the . . . point is that the whole thing about simulation is what you are, not what you do if: involvement is the keynote. The Insite Project may have some good points but it is hardly simulation.

For information about the elementary or secondary forms, write to Dr. Edward Buffie or Dr. Bruce McQuigg, respectively, at Indiana University, Bloomington 47401.

Low-Cost Instructional Simulation

Recently, and as a result of development and use of the Classroom Simulator, personnel at Teaching Research (15), under the leadership of Paul Twelker, have developed the Low-Cost Instructional Simulation. This simulation, done in the elementary school, is geared primarily toward helping participants become more effective classroom managers and thus better teachers. The two phases of the simulation are intended (a) to teach certain principles of classroom management, and (b) to provide opportunity to exercise those principles in the simulation.

In Phase I, using an exercise book and a film-tape presentation on an Audascan projector, participants react to the way a teacher handles classroom management. A participant, after seeing pairs of teaching episodes, must decide which teacher behavior is preferable and state why in the exercise book. He gets feedback as he compares his written responses with the printed responses on a following page. During the latter part of Phase I, feedback is provided in the manner of the Classroom Simulator, that is, participants see a film of how the class would respond according to each of the two teaching strategies witnessed earlier.

Phase II provides the participants a chance to practice application of the principles learned in Phase I. In Phase II, participants' responses to filmed incidents are compared with responses to the same incidents made by "expert teachers." Finally, a third section of film depicts how children would probably respond to the expert teacher behavior. Ultimately, feedback is obtained as a participant compares his response with that of the expert.

According to Teaching Research (16) the principles of classroom management to be discovered via participation in the simulation are:

1. If an activity is about to begin where standards of social behavior have either not been established or have not been previously followed, and the teacher desires to achieve specified management outcomes, then the teacher should use a social standard establishment strategy [establish rules of behavior].
2. If in an ongoing activity a child, or children, behaves in a way which violates the management outcomes, and the teacher decides to attain the management outcomes, then the teacher should use a desist strategy [control] which will attain the management outcomes with the least possible disruption.

The following example of a Phase I film-tape episode is utilized to draw out the first principle above. The written response to which the participant would compare his response is also given.

In Episode A, Mrs. Mason dismissed the children for recess and disciplined the misbehaving children who left in an unruly fashion. In Episode B, Mrs. Mason established standards for leaving the room for recess and children recessed in an orderly fashion.

Expert response: As the children have caused a disturbance while leaving for recess for the last two days, Mrs. Mason had reason to believe that they were not following a standard for dismissal. She had the choice of either establishing social standards before the children were dismissed or dismissing the children and disciplining those who were unruly. Since Mrs. Mason does not like to discipline children unnecessarily she would choose the former course of action. The result obviously was better.

An example of a Phase I film-tape episode utilized to discover the second principle depicts two boys talking rather than studying. In Episode A the teacher, without a word, stands beside the boys to suggest they go back to work. They do. In Episode B the teacher tells the two boys to go back to work. Again they do. Which teacher behavior is preferable? The expert says A since it accomplished the management objective with less disturbance.

Like the Classroom Simulator, the Low-Cost Instructional Simulation is in the tradition of operant conditioning and training. Like the

Classroom Simulator and the work at Project Insite, the teacher is shown and the participant need not take on a role. He reacts, rather, to what someone else has done.

Twelker has done rather extensive field testing of the Low-Cost Instructional Simulation and is preparing it for distribution. Information can be obtained by writing Dr. Paul Twelker, Teaching Research, Oregon State System of Higher Education, Monmouth 97361.

Human Relations: One Dimension of Teaching

Buffie (3), formally on the Project Insite staff, has directed the production and field testing of a simulation whose broad goals are "to help teachers become more effective decision makers, human relators, and professionals." During the first simulation session, participants are exposed to the filmed styles of two teachers and are asked to select the one they feel is more effective. The effectiveness of the teachers is then considered in three dimensions—knowledge of subject, instructional skill, and relationships with the learners. Henceforth, participant attention is directed to the third dimension, human relations. The teacher's responsibility in human or interpersonal relations is extended to include parents, administrators, and lay persons. Participants next are led to conclude that one's skill in human relations may be related to knowledge of the community. The second session is devoted to acquainting participants with the simulated community. In Session III, information is provided for contrasting schools ("affluent and ghetto"). A film entitled "Inner City School: My First Teaching Assignment" concludes the sessions of community-school orientation. The following sessions present and discuss "critical incidents" which are either printed, audiotaped, or filmed. Each incident is arranged in a particular order and accompanied by questions and activities which presumably will cause the participants to attain the simulation's goals. Throughout, participants are guided to discover principles such as the following:

1. The effective problem solver is sensitive to and capable of identifying the value aspects of judgments.
2. The effective human relator is not only sensitive to but respects and enjoys human differences.
3. The effective professional treats information confidentially.

For the purpose of illustration, a segment of the Session V action is presented below:

Teacher Action

Student Response

1. Stress the importance of decision making in every aspect of a teacher's life—every day he makes dozens of decisions about many matters. The sum of his decisions is the sum of his overall effectiveness. Have students describe (in writing) a good decision maker. These papers are to be set aside for later use—no discussion necessary at this point. At this juncture, it is quite satisfactory to simply indicate that one purpose in using this package is to help them become better decision makers.

   A. Now refer students to incident P-3 [the third printed incident].

> Incident P-3 states:
>
> Mrs. Brady's class is returning to the classroom after a fifteen minute recess. As she is busily arranging materials for the next lesson a girl runs up to her and reports that one of the boys "was using dirty words during recess." The girl returns to her seat quickly as the bell rings to begin the next class period.

Students are asked to respond to the written incident by completing the statement, "If I were Mrs. Brady I would . . . ."

Following writing, students describe their reactions to this situation. Much divergency may be anticipated.

   B. Discuss possible causes of the incident in terms of its being "critical."

   C. Focus student attention on diversity of perception and reaction. (Alternatives, possible consequences, justification of action.)

For further information, write Dr. Edward G. Buffie, School of Education, Indiana University, Bloomington 47401.

Inner-City Simulation Laboratory

Perhaps the most technically satisfactory simulation developed out of a research base was constructed by Cruickshank (4) for use in programs to prepare or retrain teachers for central city schools with predominantly black populations. Participants in this simulation, as in the Teaching Problems Laboratory, take on the role of Pat Taylor and are oriented to the city, community, and elementary schools in which they work. In addition they receive Community Action Agency data, advice to new teachers written by their fellow teachers, sociometric data, cumulative record folders, and a faculty handbook of rules and regulations. Following an indeterminate period of study and reaction to the protocol material, the sequence of problem solving is begun. Incidents are presented using films, role plays, playlets, written incidents, or combinations thereof.

In the fashion of the Teaching Problems Laboratory, problem presentation is followed by independent, small group, and finally total group activity. First, using guide questions in the *Data Book,* the participant identifies available alternatives. Next, in small groups each participant is responsible for projecting alternatives and considering consequences suggested by his colleagues. Finally, the large group discussions work to resolve differences and issues unresolved by small groups. Efforts are consistently geared toward the increase of self-understanding and examination of assumptions and values underlying participant behavior.

Throughout the simulation, participants play all roles—teacher, parent, child, principal, or other—in order to provide different life perspectives.

The following role play situation is preceded by a filmed incident in which Mark Connors, a pupil confronted with a failure-laden report card, dejectedly says, "I give up. There's no use trying anymore!"

Mrs. Oscar Connors --- Incident 9 ICSL
You've been called to confer with Pat Taylor in regard to Mark's grades.

Mrs. Connors, you are a bitter person. You represent those black people who feel they have been and are getting a dirty deal from "Whitey." Convinced of the need for black power, you resist any form of cooperation with white society. You want the school to lift your children up, to help them; but the reverse seems to happen. Each year your children fall further behind and hate school more. You are angry about what has happened to your husband and to your son Marvin and think that Larry was a . . . damned fool . . . to join the Army to fight the white man's battles. Since white society prevents the black man from getting ahead, the blacks should take whatever they can in any way they can. (Your attitude toward Pat Taylor and the school might be either scornful or resentful, depending upon your interpretation of the character of Mrs. Connors.)

Personal

1. Your husband is in prison for armed robbery—his second conviction. You do not visit him because the trip is costly.
2. You are the mother of six—four boys and two girls. Larry, 18, is the oldest and in the Army. Allan, 16, is a sophomore and the star of his high school basketball team. He is well liked and a leader. Marvin, 14, is your biggest problem. He is a gang member and has been arrested for assault, burglary, and attempted extortion. He was convicted and sentenced to the Boys Reformatory for his part in the gang's attempt to get "protection money" from newsboys. Mark, 12, is quite cooperative at home, especially in taking care of his sisters. He doesn't have Allan's athletic ability or popularity. He is rather independent and still hasn't joined a gang even though he's been pressured. Gloria, 11, is a fifth-grader at Edison and a good helper at home. Dorothy, 8, the "baby," is a second-grader.
3. You receive Aid to Dependent Children, but your allotment has been reduced since Larry has left home.

Your attitudes toward yourself and society

1. You are convinced that the black community must be heard, and you are very active in the black organizations of Gardner Park.
2. You are a militant parent and cannot abide teachers who are white missionaries and do-gooders or Uncle Toms who dance to "Whitey's" tune.
3. You are against integration and represent that segment of the black population that feels it should in no way cooperate with white institutions, further white values, or help in the planning of an integrated future.
4. You are particularly conscious of two qualities—appearance and respect. Although on welfare, you work hard to keep your apartment clean and to

clothe your children well. You try to instill a sense of dignity and self-respect in your children.

5. The inequalities of a white society have made you bitter. Both your husband and Marvin were represented by white public defenders who did absolutely nothing. You can easily rationalize stealing as a poor man's only way of getting ahead.

Your attitudes toward the school

1. You are angry because Larry was forced to drop out of school because of his grades. You are further annoyed because he joined the Army to fight a white man's war.
2. You feel that Allan has been successful in school only because the school needed him for the basketball team.
3. Mark's academic record is shabby and he has repeated grades 1 and 4. Some of his teachers have implied that he is retarded. You have always been badgered to "get Mark to school on time."
4. Marvin, Gloria, and Dorothy all have had poor grades. You are sure that most teachers feel black kids are dumb, so the kids act dumb.

Questions you might ask Pat Taylor

1. What did my black son do now?
2. Why don't you flunk him again? Just keep knocking him down until he quits.
3. Why doesn't Pat Taylor stay after school and work with Mark? None of the teachers ever stay. They run out of school before the kids.
4. Why do teachers keep passing the buck? They always blame Mark's problem on the home and on his previous teachers. Everybody's done this. Something's wrong.
5. Aren't you going to talk about Mark's low IQ? Did you ever know a black boy with a good IQ? They're all stupid.
6. Why don't Edison's teachers live in Gardner Park? They don't know us. They just drive through. We know what you think of us.

More information about the Inner-City Simulation Laboratory is available from Dr. Donald R. Cruickshank or from Science Research Associates, 259 East Erie Street, Chicago, Illinois 60611.

Other Simulations in Teacher Education

Simulation seems to be growing in popularity as more and more simulations and simulation games are being developed. Some in highly specialized areas of the teacher education curriculum are:

1. Venditti's *Problems of Racially Desegregated Schools* (22).
2. Swan and Johnson's *Simulation Exercises* (13) were developed for secondary teacher education. No background information is available and the incidents appear to be isolated. Cruickshank and Broadbent (7) raise doubts that this is a simulation.
3. Lehman's *Simulation in Science* (11) is a structured form of peer teaching. In many ways this method is similar to microteaching, but it is truly a human-ascendant role simulation using a background model, while microteaching is considered scaled-down teaching.
4. Urback's *Science Inquiry Laboratory Simulation* (20) involves science method students in inquiry and pseudo-inquiry laboratory teaching methodology.
5. Utsey, Wallen, and Beldin (21) have produced film situations to train teachers in the use of the Informal Reading Inventory.

Several of the simulations discussed in this chapter were displayed or demonstrated at the Association of Teacher Educators (ATE) national clinics on simulation held at The Ohio State University in the fall of 1969 and at Syracuse University in the spring of 1970. Similar conferences or shorter meetings can be arranged through ATE or by contacting Donald R. Cruickshank or Frank W. Broadbent, clinic directors.

CHAPTER TWO

The Lure of Simulation as an Instructional Alternative

Why are simulations becoming increasingly more popular in teacher preservice and in-service education? Some of the advantages are described in this chapter.

ADVANTAGES OF UTILIZING SIMULATIONS IN CONJUNCTION WITH STUDENT TEACHING

Several claims can be made to support the use of simulations as a part of student teaching programs. First, simulations permit groups of student teachers to work toward the solution of problems that are frequent and severe for beginning teachers but may not occur during the practicum. Student teaching has been criticized as a protected activity operating in an unnatural environment. The very presence of the supervising teacher reduces the possibility that problems will arise. Should they arise, student teachers often are told to keep their distance or are expected to resolve the problems in the same way as would the supervisor. This constraint is removed when simulated problems are used. Student teachers can be given opportunities to be themselves. The "model the master" tradition, which greatly limits developing a personal style of teaching, is not requisite.[1]

An important by-product of supervising teacher-student teacher interaction in a simulation is the potential for increased interpersonal awareness. Too often these relationships are restricted and guarded. Participation in a simulation can break down unfortunate artificial barriers (such as rank) and thus facilitate understanding and communication.

When it is feasible to engage many student teachers and supervising teachers prior to making classroom assignments, improved placement can be an outcome. Interaction in the simulation reveals a good deal about participants. Availability and use of such personal and professional information may assist in eliminating what we term poor assignments.

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[1]Obviously simulations which are behavior-shaping limit students' freedom too. However, they are less concerned with teaching exact behaviors than with establishing principles of behavior.

When it is not feasible to provide engagements suggested above, supervising teachers and student teachers independently can solve problems, and the data can be analyzed and persons with compatible personal and professional styles matched in the tradition of a computer dating system.

In school systems where the student teaching center approach is used, faculty can make better decisions about what school experiences the trainees will need after observing or participating in problem solving with them. Such data can make student teaching more individualized and personalized.

At the same time, student teachers in centers can get to know each other better, become a more cohesive group, and explore professional issues if given opportunities to work together as in a simulation. Often student teachers have little common ground for legitimate discussion even though they are all assigned to the same school. Consequently, griping becomes the order of business.

When student teachers participate with a full school staff in problem-solving activities, there is a great opportunity for the student teachers to get to know the school personnel and to become aware of their functions and biases. Such personnel could include the school social worker, school nurse, psychologist, home-school counselor, and principal. Activities of this nature could lead to greater team efforts in the school.

During problem-solving activities, supervising teachers encourage students to apply their college knowledge to the simulated situation. If the students do not have knowledge, curriculum implications for the college-based program are obvious.

In summary, simulations can provide a number of advantages when used in conjunction with student teaching. Specifically, simulations can—

1. Guarantee beginning teachers an exposure to severe and frequent problems which may not occur during student teaching.
2. Afford opportunities to solve difficult problems rather than watch or copy the way someone else does it.
3. Increase supervising teacher-student teacher interpersonal awareness, lessening the barriers to two-way communication.
4. Improve placement of student teachers, reducing the number of poor assignments.
5. Increase the capability for diagnosing student teacher needs and provide more individualized and personalized experiences in the host school and community.

6. Offer common ground that may enhance interpersonal relations among student teachers.

7. Provide the setting to gain knowledge of school staff resources and their functions.

8. Give student teachers an opportunity to apply what they have learned in the college classroom to simulated situations which should tend to relate theory to practice.

Clearly many of the above situations could be directed and/or engaged in by the college supervisor. He may concentrate some or all of the well-established seminar time toward similar ends. In addition, a college supervisor may find other uses for simulations. One would be to employ the simulation as bridging activity, to prepare candidates to enter the real world of teaching. Useful activities could include discussion of the hypothetical community, consideration of and reaction to school policies and rules, interpretation of student data, and consideration of alternative philosophies of teaching. Simulations typically are employed to acquaint participants with aspects of the environment they are about to enter and to introduce the tasks for which they are responsible. Without the use of a simulation the transition can be a bumpy road indeed, prefaced only by a speech from the college supervisor, entitled "When in Rome, Do as the Romans."

ADVANTAGES OF UTILIZING SIMULATIONS AS PART OF THE COLLEGE-BASED TEACHER EDUCATION PROGRAM

Each of the simulations described earlier is said to have particular advantages for use in the preservice program. Cruickshank (4:2-3) lists two major goals which can be accomplished using the Inner-City Simulation Laboratory. The same or similar goals could be generated for most of the other simulations described.

> First, the ICSL attemps to create a lifelike model of a ghetto school and neighborhood so that the learner can study the setting and attempt to understand it. The learner can operate like the anthropologist and observe the phenomenon of culture—in this case both the neighborhood's and the school's. This approach permits infinite paths of observation and inquiry. For example, the learner can be directed to attend to the value systems interacting in the setting. He can discover the predominant values of the school and its teachers and observe conflicts that occur when school-related values and ghetto cultural patterns come vis-a-vis. The teacher or teacher-to-be would do well to understand the difference between the *future* orientation of schools and the *now* orientation of its students. Often school and classroom goals are too remote, too abstract to families in ghettos who

struggle to cope with the day-to-day press of life. In this case the school's goals are singularly out of touch with the realities of life in the ghetto.

. . . .

A second advantage . . . is that [it] provides a classroom, albeit simulated, wherein the learner can assume the role of the teacher and work toward solutions of the most frequent, most severe problems reported by samples of teachers . . . In the university, use of simulations can serve as [bridging experiences] from the matter and methodology of college courses to the real world the learner is about to enter. . . . The use of simulation in the curriculum would provide a more complete and meaningful transition from the course about education to field work. . . . In the case of the ICSL the exposure and analysis of critical problems reported by teachers would prove to be an advantage in avoiding some damaging effects of cultural shock.

In addition to use in the ways described above and in conjunction with student teaching, simulations also—

1. Complement most courses in the education sequence, especially educational sociology, educational psychology, child guidance, child development, and philosophy of education.
2. Serve as an admission-selection device when used in the manner of a situational test.
3. Become a basic component for a course in introduction to education.
4. Become a seminar for seniors who are about to enter teaching.
5. Substitute for unstructured observation and participation requirements.
6. Provide remedial help for those experiencing difficulty in laboratory work.
7. Serve as an elective course in problems of teaching.

Without consulting each developer, it would be presumptuous to be too specific about the utilization of an individual simulation.

ADVANTAGES OF UTILIZING SIMULATIONS IN IN–SERVICE AND GRADUATE EDUCATION

Simulations seem to have validity for both in-service and graduate education. Experience dictates that total school faculties have much to gain by becoming involved in a simulation. Group-centered simulation experiences can be seen as a mild form of sensitivity training in which participants gain new insight into their own behavior and that of their colleagues. Greater staff cohesiveness seems to be a guaranteed by-product.

Most of the simulations described have been used with teachers in service and were well accepted. Individual developers can provide

supportive data. The Inner-City Simulation Laboratory has recently been used with teachers in cities as large as Montreal, Baltimore, and Cleveland and as small as Akron and Youngstown. In the latter instance, teachers and classroom aides continue to work in problem-solving teams with very favorable response.

The use of simulations in graduate education is desirable if only to expose future teacher educators to the potential of existing simulations and their uses.

General Advantages of Simulation

Heretofore advantages have been claimed for using simulations in three specific contexts—as an adjunct to student teaching, as part of the college-based sequence, and for in-service and graduate education. Following are some advantages of simulations not limited to specific situations. They are described more fully by Beck and Monroe (2:48-49), Cruickshank and Broadbent (7:30-32), and Twelker (17:2).

1. Simulations provide potentially greater transfer from the training situation to the life situation. This assumption is consistent with principles of transfer of training, one of which is, "The more similar the stimuli in two situations, the more positive transfer there is from one to the other." Stated another way, there is more likelihood that training taken in a job-like setting will have greater application when on the job than would information obtained by reading about the job or listening to lectures about it. Practices followed in driver education show widespread acceptance of the transfer principle resulting in increased use of driver-training simulators.
2. Simulations provide a responsive environment. There is always some immediate feedback or knowledge of results. In the Classroom Simulator the feedback is provided by film showing the student teacher how a class or individual pupil probably would respond to his teacher behavior. In the Teaching Problems Laboratory the peer group or others provide reaction. Immediate knowledge of results is a requisite to learning, but unfortunately most teaching-learning environments provide little of it. In many typical learning settings, especially lectures, the environment can be totally unresponsive. No learner behavior can be tried out.
3. Simulations can be less costly. Simulations often provide experiences in a low-cost model of a high-cost environment. It is cheaper to provide a simulation of a classroom than to use a real

one. Likewise, it is usually less expensive to train in simulated than in real environments. A senior vice-president for American Airlines has said that jet pilots could be trained in simulators for $4300 a year less than by conventional methods and that the planes no longer required for training could make available 24,000 more hours of passenger service. Using Sim One, Abrahamson, Wolf, and Denson (1) found that beginning residents in anesthesiology might save twenty-two training days and eliminate untold possible patient discomfort and harm.

4. Simulations can telescope time. Instead of waiting months or years for classroom problems to occur, they can be programmed to happen within the training period. Therein they can be scrutinized and dealt with for variable lengths of time. They can even be repeated for the trainees.

5. Laboratory settings often are difficult to find. Many colleges encounter serious problems in locating schools for observation, participation, and student teaching. Simulations provide an alternative and have been cited by the National Council for Accreditation of Teacher Education (NCATE) as an acceptable form of laboratory experience.

6. Simulations allow the participant opportunities for the unfettered practice of principles he has learned in education courses, without censure or fear.

7. Participants learn to locate, analyze, and apply community, school, and classroom data in a meaningful context.

8. Simulations are relevant. Usually drawn carefully from the real world, they provide a means by which personnel in training can be exposed, under controlled conditions, to the most critical aspects of their future work (teaching, flying, practicing medicine) that cannot be reproduced except in such settings. A well-conceived simulation is concerned only with essential tasks and functions. Lectures often lead learners through an enormous amount of frosting, and sometimes an entire training program can fail to prepare participants for what they are really supposed to do.

9. Simulations permit the trainee to be himself. Far different from student teaching, which is likened to "learning to cook in your mother-in-law's kitchen," simulations demand participants to be themselves—to try out their own behavior and values.

10. Simulations can help the participant gain intellectual control over his behavior. Too often teachers in classrooms respond to

problems at a gut level. The opportunity to confront real problems in hypothetical settings permits one to work toward meeting subsequent problems with less alarm, greater confidence, and less damage to all involved.

11. Simulations permit the wedding of classroom theory and practice. In the Low-Cost Simulation, participants observe, theorize, hypothesize, and test their notions all in the same context. Most often students are asked to learn (often by being told) principles but seldom are they forced to apply them within any reasonable amount of time. Consequently, students never develop the propensity toward theory application. No wonder they feel that what they learn in education courses has no application. Few of us have ever demanded that it be applied!
12. Simulations are psychologically engaging. Participants in simulations invariably remark that the simulations were among the high points of their preparation. Any time one is forced to make decisions and bear the consequences, involvement is insured.
13. Simulations are safe. Pupils are not the subjects of untrained practitioners. It is far better for everyone to make his first serious mistake in a simulated situation than in a real setting. Virtual on-the-job training can be done without the worry of inflicting irreversible damage.
14. Simulations are effective. In addition to being highly attractive to students, simulations have been found to be at least as effective as traditional methods of instruction.

Of course, not all of the aforementioned advantages apply to all simulations, and it would be well for the potential user to communicate with developers cited herein to determine what the potential of each simulation can be.

Research results support certain other advantages. Cruickshank (5) has surveyed and reported selected research in simulation in teacher education.

CHAPTER THREE

Decisions, Decisions

This bulletin is about simulations. The general purpose is to suggest that simulation is a viable instructional alternative that is available for use in many phases of teacher education. Specifically, the attempt has been to acquaint the reader with a few of the better known developments and to extol their advantages. In this sense it can be considered as propaganda, and, taken literally, it is.

This last chapter is devoted to the many decisions which face the potential user. Questions which can be used as criteria in selecting simulation materials include:

1. How would a preservice or in-service program benefit from the introduction of the simulation? What specifically would happen to participants that could be assumed to result in improved classroom practice and increased pupil learning?
2. How valid is the simulation? Does it have an empirical or theoretical base?
3. What is the quality of the simulation? Is it done well enough to encourage and maintain high levels of psychological involvement?
4. Where and how should the simulation be used? Should it be used as an introduction for selection and screening; a prelude to student teaching; an adjunct to student teaching; remedial work with new teachers in service, with supervisors and student teachers, or with all teachers; or in combinations of the above?
5. Who would direct the simulation? Is someone already qualified? Is there a need for several persons to be trained as directors? How much training is required? What is the cost?
6. What other resources are required? Is there a package to be purchased? How much is it? What else is needed? Could we create our own simulation more cheaply?
7. How much space would be required? What is the pupil-teacher ratio?
8. How will we evaluate the success of its use?

Another related question would be, What are the results of field tests of the simulation? Direct attention to these questions in juxtaposition with each potential simulation should eliminate much of the guesswork in materials selection.

Obtaining answers to the questions can be approached in a variety of ways. The ATE can sponsor a clinic on instructional simulation on your campus or elsewhere in your state. Two ATE-sponsored national clinics have already been held at Ohio State and Syracuse universities. The developers of simulations can hold individual meetings in public schools and colleges wherein you and your colleagues can participate in the simulation and gain firsthand knowledge of it. Representatives of companies marketing simulations often are willing to provide materials demonstrations and/or leave materials on loan. Of course, more elaborate descriptions of the simulations appear elsewhere in the literature. The references contained in this work will provide a good beginning.

The contention that simulation will play an increasingly important part in training programs is supported in the literature in such diverse fields as the military and education. An Arthur D. Little report of 1968, cited in Twelker (17:1), notes:

> The growing emphasis on cost effectiveness in military training programs will result in a much greater use of simulation training. NTDC personnel suggest that the use of simulation is in its infancy and that there may be almost total dependency on simulation in several training areas in the not-too-distant future.

Ohio State University Dean Luvern L. Cunningham (9:27) concludes:

> My personal view of simulation is that it is the most promising . . . single innovation . . . that we have today. Much, indeed most, of its potential remains to be activated; we have only begun to invent appropriate means for its usage.

The only serious question remaining is how simulations can be used best.

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